(19) World Intellectual Property Organization

International Bureau





(43) International Publication Date 6 January 2005 (06.01.2005)

PCT

(10) International Publication Number WO 2005/001967 A1

(51) International Patent Classification7: H01M 4/92, 4/96, B01J 23/26, 23/42, 23/72, 23/755, 23/86, 23/89, H01M 8/10

(21) International Application Number:

PCT/US2004/017333

(22) International Filing Date:

3 June 2004 (03.06.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/475,559

3 June 2003 (03.06.2003) US

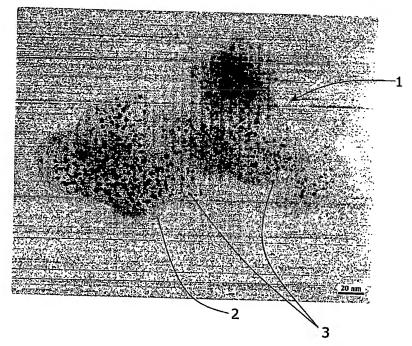
- (71) Applicants (for all designated States except US): SYMYX TECHNOLOGIES, INC. [US/US]; 3100 Central Expressway, Santa Clara, ca 95051 (US). HONDA GIKEN KOGYO KABUSHIKI KAISHA [JP/JP]; c/o Kabushiki Kaisha Honda, Gijyutsu Kenkyusho, 4-1, Chuo-1-chome, Wako-shi, Saitama 351-0193 (JP).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): CHONDROUDIS,

Konstantinos [GR/US]; 542 Firloch Avenue, #3, Sunnyvale, CA 94086 (US). GORER, Alexander [IL/US]; 455 Mill River Lane, San Jose, CA 95134 (US). DEVENNEY, Martin [IE/US]; 1311 Bonita Avenue, Mountain View, CA 94040 (US). HE, Ting [CN/US]; 5794 Norn Street, Dublin, OH 43016 (US). OYANAGI, Hiroyuki [JP/JP]; c/o Kabushiki Kaisha Honda, Gijyutsu Kenkyusho, 4-1, Chuo-1-chome, Wako-shi, Saitama 351-0193 (JP). GIAQUINTA, Daniel, M. [US/US]; 149 Jasmine Court, Mountain View, CA 94093 (US). URATA, Kenta [JP/JP]; c/o Kabushiki Kaisha Honda, Gijyutsu Kenkyusho, 4-1, Chuo-1-chome, Wako-shi, Saitama 351-0193 (JP). FUKUDA, Hiroichi [JP/JP]; c/o Kabushiki Kaisha Honda, Gijyutsu Kenkyusho, 4-1, Chuo-1-chome, Wako-shi, Saitama 351-0193 (JP). FAN, Qun [US/US]; 1178 Quintana Way, Fremont, CA 94539 (US). STRASSER, Peter [DE/US]; 551 Mariposa Avenue, Mountain View, CA 94041 (US).

(74) Agents: ALLEN, Derick, E. et al.; Senniger, Powers, Leavitt & Roedel, 1 Metropolitan Square, 16th Floor, St. Louis, MO 63102 (US).

[Continued on next page]

(54) Title: PLATINUM-CHROMIUM-COPPER/NICKEL FUEL CELL CATALYST



(57) Abstract: A fuel cell catalyst comprising platinum, chromium, and copper, nickel or a combination thereof. In one or more embodiments, the concentration of platinum is less than 50 atomic percent, and/or the concentration of chromium is less than 30 atomic percent, and/or the concentration of copper, nickel, or a combination thereof is at least 35 atomic percent.

- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.